Clandestine Methamphetamine Labs and Children

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Historical Perspective

- China ma huang
- German synthesis
- Japanese chemist Ogata
- Early US medicinal use
- FDA ban
- Illegal production

Current Perspective

- Use among high school seniors doubled between 1990-1996
- Lab seizures have increased tenfold in the midwest from 1995-1997
- The average cook will teach 10 others
- Lab cleanup can cost $10-15,000 and up

Methamphetamine Use

- During 2000, 4% of the U.S. population reported trying methamphetamine at least once in their lifetime.
- In Montana, 9% graduating seniors report using meth
- Abuse is concentrated in the western, southwestern, and midwestern United States.

National Household Survey on Drug Abuse

Trends

- Between 1993 and 1995, deaths due to meth overdoses rose 125 percent
- Between the first half of 1996 and the first half of 1997, meth-related emergency room visits doubled.

SAMHSA's Drug Abuse Warning Network

2003 Montana Methamphetamine Treatment

MCDC admissions

- 56% ETOH
- 23% Meth
- Three fold increase between 1992 and 2002

Other treatment

- Adult 5,967
  13% meth
- Youth 773
  6% meth

Why is meth so popular?

- Powerfully addictive
- CNS stimulant
- 6-8 hour high
- Smoked, ingested, snorted or injected
- Easy to produce
- Relatively inexpensive

Desired Meth Effects

- Increased energy
- Weight loss
- Decreased need for sleep
- Euphoria
- Increased sexuality

Meth Effects

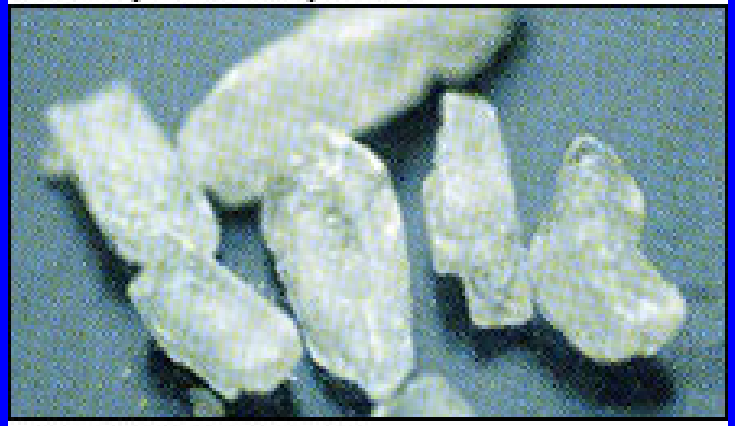
- Dry itchy skin
- Welts
- Nausea, vomiting
- Blurred vision
- Fever
- Twitching
- Strokes

Appearance

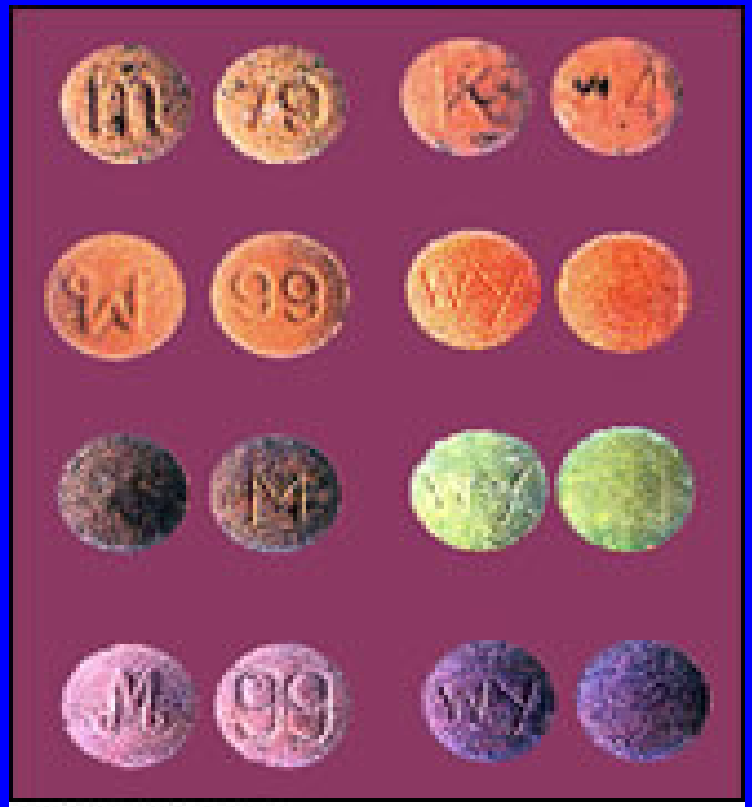
- White powder that easily dissolves in water
- Clear crystalline chunks referred to as crystal meth or ice
- Small brightly colored tablets, sometimes called yaba

Types of Methamphetamine

Methamphetamine powder



Ice methamphetamine



Yaba tablets

Signs and Symptoms of Meth Users

- Agitation
- Fast and excited speech
- Decreased appetite, weight loss
- Increased physical activity
- Dilated pupils
- Hypertension, tachycardia
- Increased respiration
- Shortness of breath
- Dizziness

Signs and Symptoms (cont.)

- Nausea and vomiting
- Diarrhea
- Insomnia
- Visual and auditory hallucinations
- Intense paranoia
- Compulsive, repetitive actions, especially picking or scratching at skin
- Episodes of sudden violent behavior

Long-term Effects

- Addiction, increased tolerance, withdrawal symptoms
- Neurotransmitters “turned off”
- Tremor, choreoathetoid movements
- Paranoia, hallucinations
- Weight loss
- Insomnia
- Stroke

Lab Findings

- Leukocytosis
- Hyperglycemia
- Elevated CPK
- Elevated LFT
- Myoglobinuria

Amphetamine Toxicity

Cardiovascular

- Vasospasm
- Hyertension
- Tachycardia
- Dysrhythmias
- Myocardial ischemia
- Cardiomyopathy

Muscular

- Muscle rigidity
- Rhabdomyolysis

Pulmonary

- Pulmonary edema

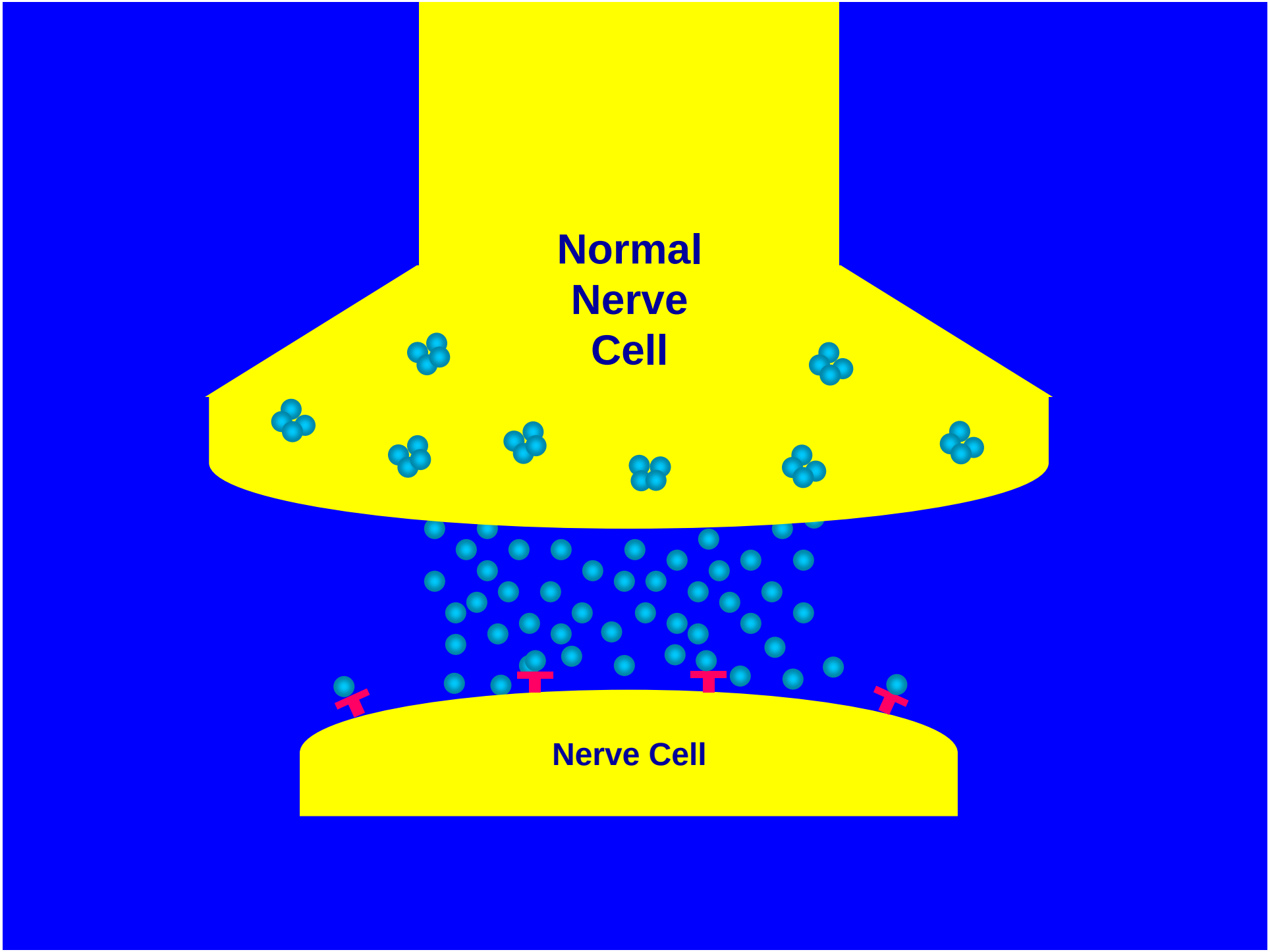
NeurologicToxicity

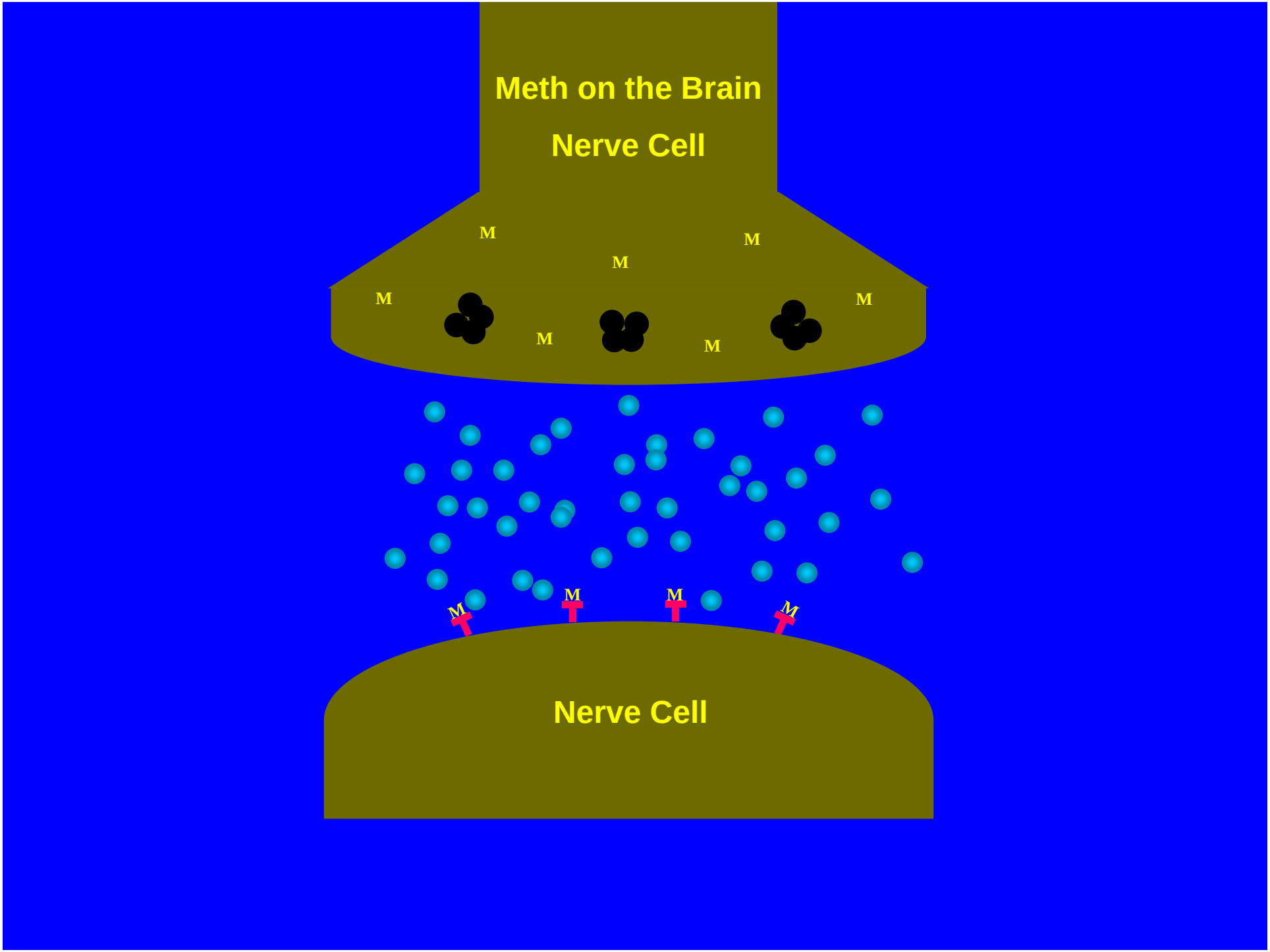
CNS

- Agitation
- Anorexia
- Bruxism
- Euphoria
- Headache
- Hyperreflexia
- Hyperthermia
- Headache
- Intracranial hemorrhage
- Paranoid psychosis

Sympathetic NS

- Diaphoresis
- Tachypnea
- Mydriasis
- Tremor
- Nausea


Normal
Nerve
Cell
Nerve Cell


Meth on the Brain
Nerve Cell
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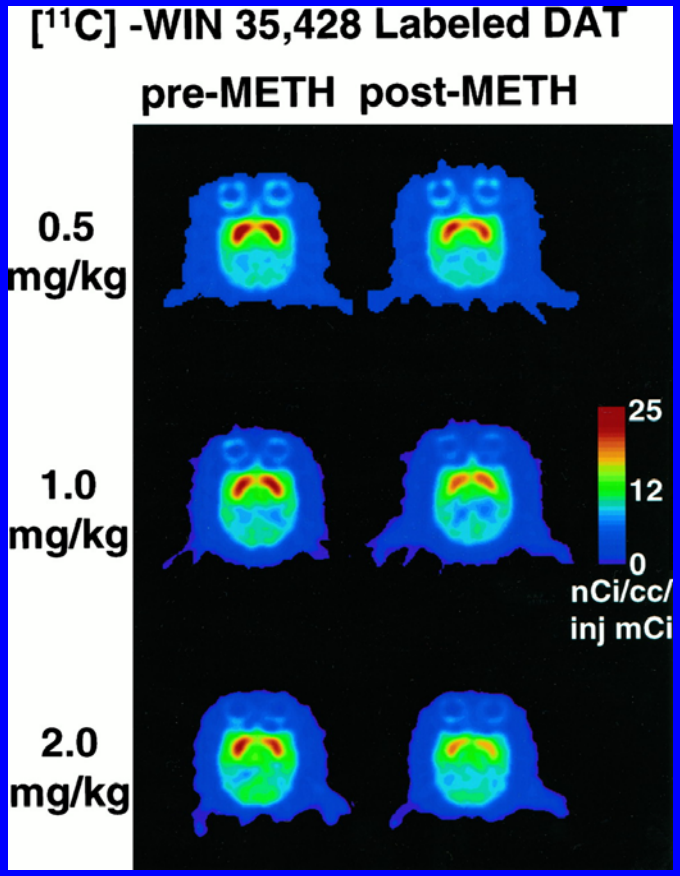
Nerve Cell

Brain Changes With Meth Use

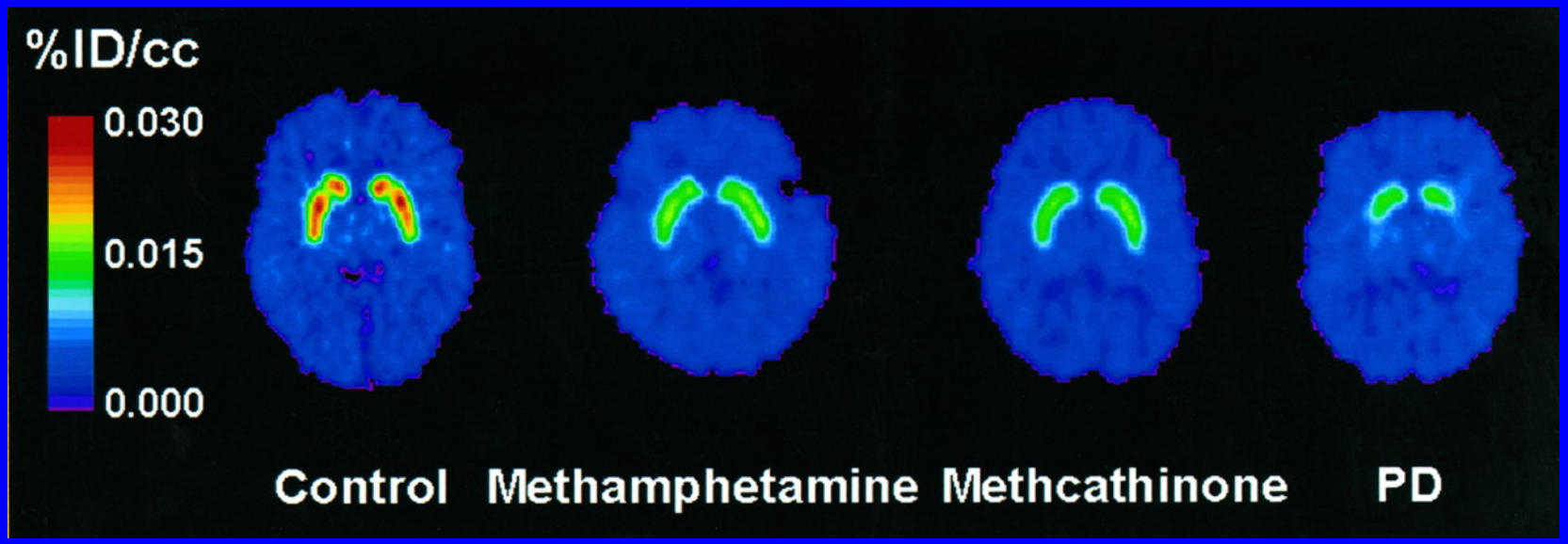
- After Meth is stopped at least 6-12 months of symptoms
  - Profound depression, abnormal mood
  - Insomnia
  - Psychosis, paranoia
- Permanent brain changes
  - Brain scans show up to 80% reduction in Dopamine metabolism
- CNS damage similar to Alzheimer's disease, stroke, and epilepsy.

Brain Changes with Meth Use

- Baboon study N=90
- Given Meth doses equivalent to humans
- PET scan, decreased dopamine transporter activity in the caudate, 3 weeks after Meth
  - Villemagne 1997



Brain Changes with Meth Use



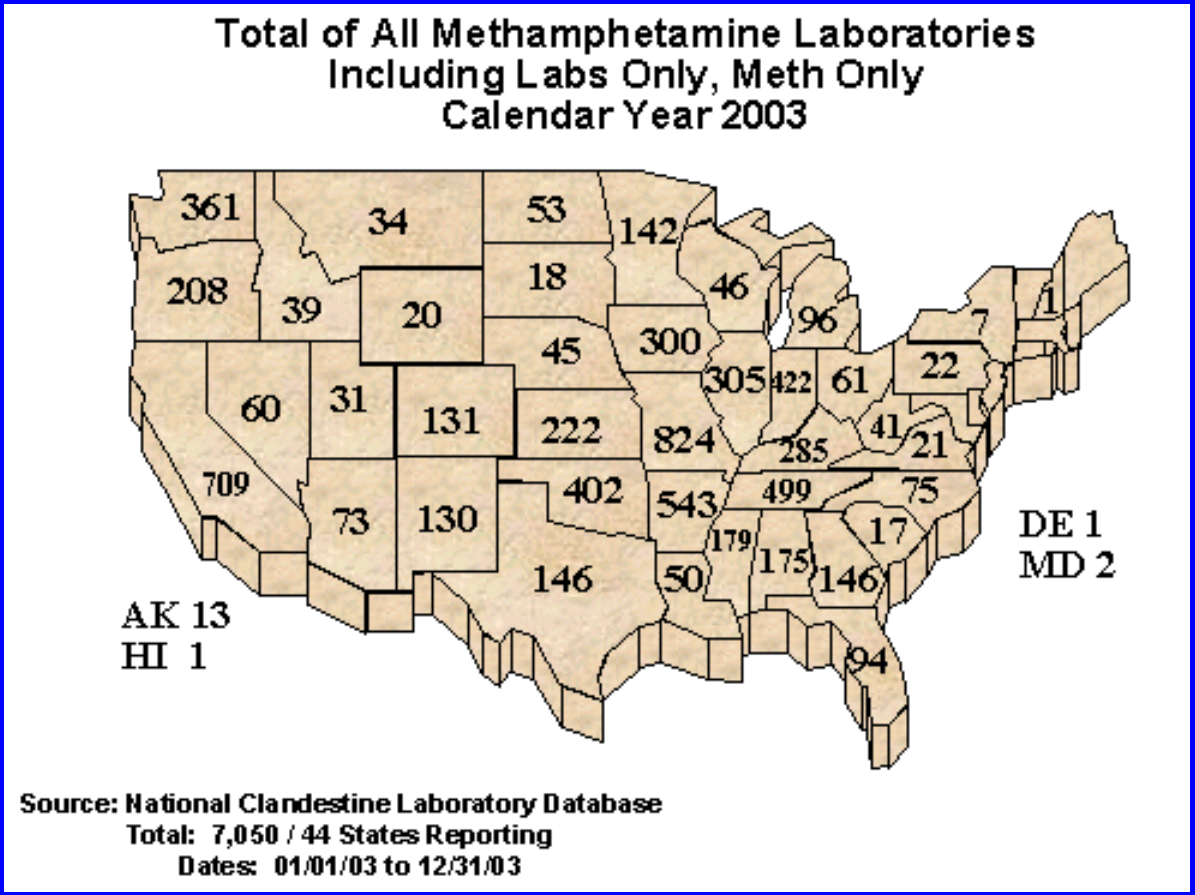
PET scans comparing control, Meth users with 6 mo-5years abstinence, and patients with Parkinson's Disease, showing decreased dopamine transporter activity in the caudate and putamen. 25% decrease for Meth users, and 60% for PD.

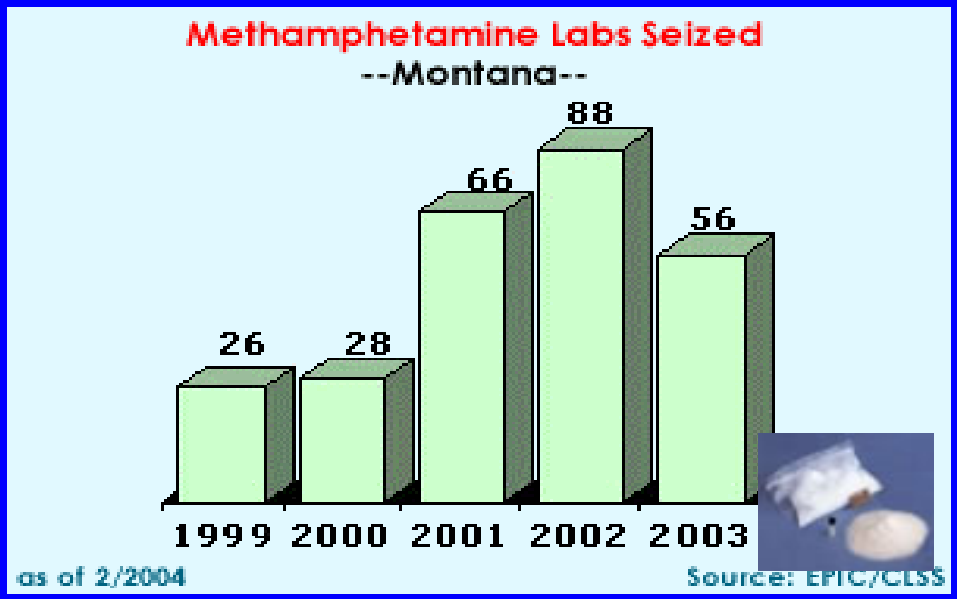
McCann 1998

Withdrawl

- Depression
- Anxiety
- Fatique
- Paranoia
- Aggression
- Intense Cravings

Clandestine Labs





Law enforcement officers identify methamphetamine as the most significant drug problem in Montana.

Mexican trafficking organizations are responsible for the majority of methamphetamine distribution in the state.

There are numerous small-scale local laboratory operators producing moderate quantities of methamphetamine for personal use or local distribution.

Montana State Facts

Population: 904,433

Law Enforcement Officers: 1,116

State Prison Population: 4,500

Probation Population: 6,248

Violent Crime Rate Nat'l Ranking: 27

Federal Drug Seizures

Cocaine: 0.5 kgs.

Heroin: 0.0 kgs.

Methamphetamine: 8.8 kgs.

Marijuana: 107.2 kgs.

Ecstasy: 0 tablets

Meth Labs: 56 (DEA, state, local)

2003 data

Where Clandestine Drug Labs Are Found

- Homes
- Motel Rooms
- Campgrounds
- Mini-storage buildings
- Motor homes
- Trailers
- Garages
- Sheds

Clandestine labs

- Household products
- Farm products
- Chemical products

Clandestine Labs

- Many recipes
- Variable ingredients
- Phenyl-2-propanone (P2P)

“An excerpt from the Betty Cranker Cookbook:
Take a pinch of red phosphorous, a smidggen of ephedrine, a dash of iodine and a skosh of lye. Add some distilled water and simmer for a few hours and hope it doesn’t explode and kill you.”
Paul B. Johnson, Post Register , Idaho

Phenyl-2-propanone (P2P) Methylamine (CH_3NH_2) Method

- Used by 90% of clandestine labs
- P2P + CH3NH2 precursors
- Processed with heat, aluminum, mercuric chloride
- Unpleasant odor

Alternatives

- Hydrogenation of ephedrine
- Red phosphorous used as a catalyst with hydriodic acid
- Advantages decreased detection, high yield, common chemicals
- Synthesis of P2P using phenylacetic acid and lead acetate
- Synthesis of phenylacetic acid from benzylchloride, toluene, or benzene
- Synthesis of ephedrine from propriophenone or methylamine

Signs of a Clandestine Meth Lab

- Unusual strong odors
- Windows blacked out
- Rent paid in cash
- Excessive trash
- Unusual amounts of clear glass containers
- Many OTC cold remedy containers
- Propane tanks with fittings that have turned blue
- Coffee filters containing red sludge or shiny white crystals
- Presence of unusual chemicals (toluene, acetone, coleman fuel, acids, red phosphorus)

MT Meth Labs and Kids FY 2003

- Sites with child affected 298
- Sites with child exposed to toxic chemicals 297
- Sites with child residing onsite 19
- Sites with child injured 3
- Sites with child killed 0
- Children placed in protective custody 4

Methamphetamine Lab Hazards to Children

- Accidental meth ingestion
- Chemical hazards
- Physical hazards
- In utero effects
- Substance abuse
- Neglect
- Abuse

Children Who Ingest/inhale Illegal Drugs

- Children pick up pieces of the raw drug or carry the drug powder on their hands and put their hands in their mouth
- Children inhale the smoke in a home with multiple users
- Most identified cases are Cocaine and Methamphetamine
- Few cases reported in the literature

Accidental Ingestion Victim

Children Who Ingest/inhale Illegal Drugs

- Few cases reported in the literature
  - 11 month old boy with irritability and blindness found to have urine + for meth. Symptoms resolved after 12 hours.
    - » Gospe, 1995
  - 10-month-old infant died from “crack” cocaine ingestion. 2-year-old brother fed him “crack” found on floor and crib.
    - » Havlik, 2000

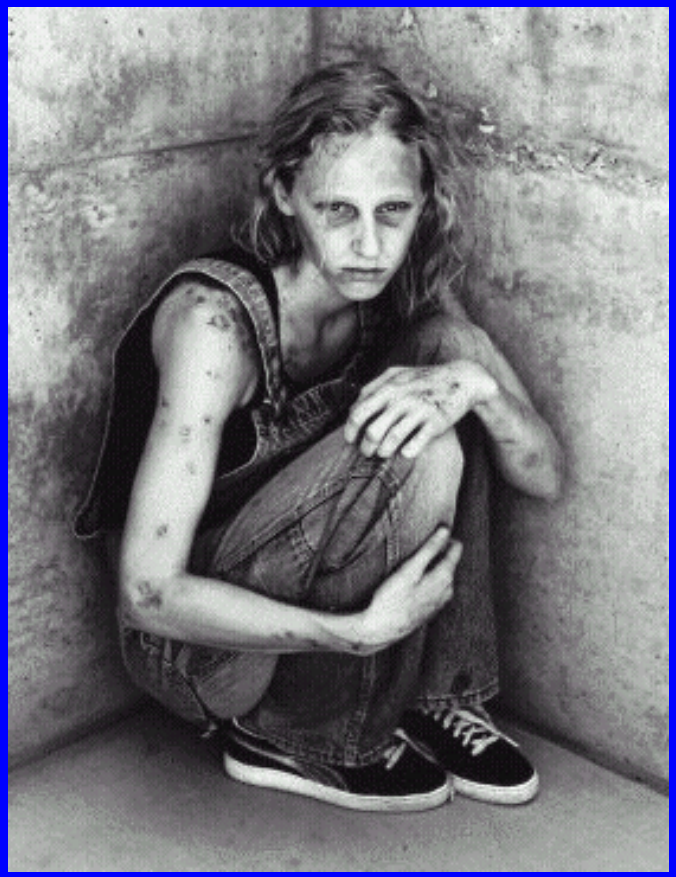
Ingestion/Inhalation

- Few cases reported in the literature
- Arizona 2002 Meth OD death in breastfeeding infant
- Kolecki, 1998
  - 18 children under 7 years old accidentally ingested methamphatamine left out by parents .
  - Symptoms:Increased heart rate, agitation, irritability and vomiting, muscle breakdown, fever,ataxia, seizure

Methamphetamine

They say meth won’t kill you.

But you will wish it had.



Children Exposed to Toxins in Home Methamphetamine Labs

- UCDMC CAARE Center data
  - 64 DEC victims screened/ >50 ng meth
  - 50 % of Level I cases are tox positive
  - 15% of Level II cases positive

Toxicity of Ingredients
(>300 chemicals used)

- Acetone
- Anhydrous ammonia
- Ephedrine
- Hydrioodic acid
- Hydrochloric acid
- Iodine
- Phenylacetic acid
- Phenyl-2-propanone
- Phosphine
- Pseudoephedrine
- Red phosphorous
- Sodium hydroxide
- Sulfuric acid
- Toluene

Meth Lab Human Toxicity

- Phosphorus -Inhalation of phosphine gas is lethal
- Lye or Acid - Concentrated caustic substance produces severe burns
- Solvents – CNS, hepatic, renal
- Iodine – eyes, nose, skin irritation or burn, abdominal pain, thyroid disease

Toxicity of Drug Contaminants

- Lead
- Mercury
- Incomplete reaction products
  - 10-39% of product
  - *a*-benzylphenethylamine derivatives common contaminant – seizure potential

Special Issues

- Prenatal exposures
- Age specific physiology
- Behaviors
- Vulnerable CNS

“Prenatal exposure to drugs of abuse is the single largest preventable cause of developmental compromise of American children today. “

Malanga CJ; Kosofsky BE. Does drug abuse beget drug abuse? Behavioral analysis of addiction liability in animal models of prenatal drug exposure.

Developmental Brain Research **147(1-2): 47-57, 2003.**

Meth Moms

- Decreased growth, in meth using moms, especially in combination with smoking
- Drug withdrawl symptoms requiring pharmacologic intervention in 4%

  Smith L et al Developmental and Behavioral Peds 2003

- Developmental problems

Meth Use During Pregnancy

- Mother
  - Poor prenatal care, nutrition
  - Ruptured placenta
  - Preterm labor, breech delivery
  - STDs (HIV, Hepatitis)

Hazards for Children Associated with Meth Labs

- Neglect
- Physical abuse
- Sexual abuse
- Increased risk for accidents
- Increased risk for infant mortality

Parenting Behavior of Substance-Abusing Mothers

- Compromised parenting capacities
  - Preoccupation with use
  - Resources use
  - Physical/mental health problems
  - Lack of structure
  - Lack of supervision

Child Neglect

- No insurance
- Frequent ER use
- Poor hygiene
- Skin infections
- Inconsistent chronic disease management
- Poor preventive care
- Incomplete immunizations
- Malnutrition/ failure to thrive

Increased Risk for Accidents

Meth Lab Children DEC Medical Protocol

Angela Rosas, MD
UCDMC CAARE Center

- Decontamination if needed: wash down, change clothing, shoes at scene
- Health assessment at scene or immediately to health facility
- Urine/Blood tox screen within 12 hours, “any measurable amount”, >50 ng.
- Additional tests, studies as indicated

DEC Medical Protocol

Forensic medical examination within 24 hours

- Medical problems
- Physical or sexual abuse, malnutrition
- Labs, X-rays as needed

Comprehensive medical exam, behavioral and developmental assessment within 30 days

DEC Medical Protocol

- Long-term treatment
  - Assignment of primary care provider/clinic for follow-up of all health problems
  - Mental health treatment, counseling
  - Developmental delays treatment:Speech/OT/PT

Addiction Treatment

- Shift from focus on prenatal substance abuse and birth outcomes to the "caregiving environment" after birth
  - Abuse & neglect
  - Parenting behaviors, attitudes toward parental role
  - Passive exposure/child endangerment from drug labs
- Systems linkage: CPS, CJS, welfare, health services, mental health
  - Screening for AOD use across systems
  - Linkage and referral
  - Coordination of services
- Child placement outcomes in relation to treatment participation, compliance, and completion

Team Approach

- Medical and mental health services
- Child protective services
- Law enforcement

Governor's Conference 2004

- **Child Protective Services**
- **Community Treatment**
- **Courts**
- **Environmental Clean-up**
- **Law Enforcement**
- **Media/Business**
- **Prevention**
- **Youth/Education**